

CHAPTER SIX
MEANS AND METHODS OF COMMUNICATIONS

TABLE OF ARTICLES

<u>Section</u>	<u>Article</u>	<u>Subject</u>	<u>Page</u>
		SECTION A	6-5
6000.		<u>TYPES OF NAVAL COMMUNICATIONS</u>	6-5
	6001.	Operational Communications	6-5
	6002.	Administrative Communications	6-5
	6003.	Means of Transmission	6-5
6010.		<u>PHYSICAL DELIVERY</u>	6-5
	6011.	Description	6-5
	6012.	Advantages	6-6
	6013.	Procedure	6-6
6020.		<u>TELECOMMUNICATIONS</u>	6-6
	6021.	Telecommunications	6-6
6030.		<u>SOUND</u>	6-7
	6031.	Signaling by Sound	6-7
	6032.	Underwater Sound Devices	6-7
6040.		<u>VISUAL</u>	6-7
	6041.	Visual Systems	6-7
	6042.	Interception of Visual Communi- cations	6-7
	6043.	Visual Silence	6-8
	6044.	Visual Responsibility	6-8
	6045.	Preference for Transmission	6-9
	6046.	Use of Signal Lights	6-9
	6047.	Use of Speed Lights	6-10
	6048.	Visual Communications With Aircraft	6-11
6050.		<u>ELECTRICAL</u>	6-12
	6051.	Radio and Wire	6-12
	6052.	Circuit Terminology	6-12
		SECTION B	6-13
6100.		<u>RADIO</u>	6-13
	6101.	Nomenclature of Radio Frequencies	6-13
	6102.	Selection of Radio Frequencies	6-13
	6103.	Susceptibility of Transmissions	6-13
	6104.	Types of Radio Watches	6-14
	6105.	Split-Phone Watches	6-14
6110.		<u>RADIO NETS</u>	6-14
	6111.	Formation of Nets	6-14
	6112.	Net Control Station	6-15
	6113.	Alternate Net Control Station	6-15
	6114.	Free Net	6-15
	6115.	Directed Net	6-15
	6116.	Types of Nets	6-16
	6117.	Net Transmissions	6-16

TABLE OF ARTICLES(Continued)

<u>Section</u>	<u>Article</u>	<u>Subject</u>	<u>Page</u>
6120.		<u>SHIP-TO-SHORE CIRCUITS</u>	6-16
	6121.	Use of Ship-to-Shore Circuits	6-16
	6122.	Local Harbor Nets	6-17
	6123.	Local Ship-to-Shore Circuits	6-17
	6124.	Replies to Commands Ashore	6-17
6130.		<u>POINT-TO-POINT CIRCUITS</u>	6-17
	6131.	Fixed Circuits	6-17
	6132.	Hourly Identification	6-17
	6133.	Domestic Point-to-Point Fixed Operation	6-18
	6134.	Conference Circuits	6-18
	6135.	Use of Point-to-Point Circuits by Forces Afloat	6-18
6140.		<u>AMATEUR RADIO</u>	6-18
	6141.	Amateur Radio Stations Afloat and in Aircraft	6-18
	6142.	Amateur Radio Stations Ashore	6-19
	6143.	Ashore at Overseas Bases	6-20
	6144.	Merchant Ships Under Naval Control	6-20
	6145.	Peacetime Operation Within Amateur Frequency Bands	6-20
6150.		<u>CALIBRATION OF EQUIPMENT</u>	6-20
	6151.	Calibration	6-20
	6152.	Use of Frequency Meters	6-21
	6153.	Testing Transmitters	6-21
	6154.	Tests and Exercises Using Emer- gency Lifeboat Transmitters	6-22
	6155.	Frequency Tolerances	6-23
	6156.	Reduction of Unwanted Emission	6-23
	6157.	Receiver Radiation	6-23
	6158.	Personal Radio Receivers in Wartime	6-23
6160.		<u>WIRE</u>	6-24
	6161.	Landline Facilities	6-24
	6162.	Commercial Teletypewriter Service	6-24
	6163.	Teletypewriter Equipment	6-24
	6164.	Navy Telephone Facilities and Service	6-24
		SECTION C	6-25
6200.		<u>METHODS OF RADIO TRANSMISSION</u>	6-25
	6201.	Principal Methods	6-25
	6202.	Receipt Method	6-25
	6203.	Intercept Method	6-25
	6204.	Broadcast Method	6-25
6210.		<u>FLEET BROADCASTS</u>	6-26
	6211.	Primary Means of Delivery to Operating Forces	6-26

TABLE OF ARTICLES(Continued)

<u>Section</u>	<u>Article</u>	<u>Subject</u>	<u>Page</u>
6220.		<u>GENERAL BROADCASTS</u>	6-26
	6221.	Contents of General Broadcasts	6-26
	6222.	Hydrographic Information	6-27
	6223.	Merchant Ship Broadcasts (MERCASST)	6-27
	6224.	Press	6-28
SECTION D			
6300.		<u>EMERGENCY, DISTRESS AND SAFETY</u>	
		<u>TRAFFIC</u>	6-29
	6301.	International Regulations	6-29
	6302.	Naval Vessels in Distress	6-29
	6303.	Distress Frequencies	6-29
	6304.	Distress Watches Afloat	6-29
	6305.	Distress Watches Ashore	6-30
	6306.	International Form	6-30
	6307.	Relaying Distress Messages	6-31
	6308.	Merchant Ships in Distress	6-31
	6309.	Special Message Warnings	6-32
SECTION E			
6400.		<u>ARMED FORCES RADIO AND TELEVISION</u>	
		<u>SERVICE STATIONS</u>	6-32
	6401.	Identification of Radio and TV Stations	6-32

CHAPTER SIX

MEANS AND METHODS OF COMMUNICATIONS

SECTION A

6000. TYPES OF NAVAL COMMUNICATIONS

6001. OPERATIONAL COMMUNICATIONS

- .1 Communications directing or affecting the actual movement of forces, ships, troops and aircraft to or in the area of combat, whether real or simulated, are operational. Weather and other vital reports affecting the safety of life, ships, forces or areas also are operational.
- .2 Examples:
 - (a) Tactical communications.
 - (b) Combat intelligence, enemy reports, or information having vital bearing upon the disposition, movement or employment of forces.
 - (c) Strategic or vital weather reports.
 - (d) Control of communications, cryptography, and deception and counter-measures.
 - (e) Hydrographic information.
 - (f) Combat logistics. (Orders requiring logistic provisions of immediate importance to operations in progress.)

6002. ADMINISTRATIVE COMMUNICATIONS

- .1 Administrative communications are communications which deal with routine matters, personnel, routine reports, logistic requirements and similar subjects.
- .2 PRIORITY is the highest precedence which may be assigned to administrative traffic.

6003. MEANS OF TRANSMISSION

- .1 Naval messages may be transmitted by physical delivery, by telecommunications, or by any combination of the two.
- .2 Where time considerations permit, physical delivery will be used in preference to telecommunications. This action, however, should not violate the policy that correspondence (letters, speedletters, etc.) will be used whenever possible.

6010. PHYSICAL DELIVERY

6011. DESCRIPTION

- .1 Physical delivery, as the name implies, is transportation of the message from the communication center of the originator to that of the addressee. U.S. Mail, guardmail, Armed Forces Courier Service, and local messenger are examples of such transportation. Plane, message drop, boat, diplomatic pouch or any other available system of transportation may be used with due regard to the security of the matter involved.

6012. ADVANTAGES

- .1 Physical delivery is of great value in relieving congestion over communication circuits, particularly in the case of long messages wherein no immediate action is required. In addition, when circuits are heavily loaded and the distances involved are comparatively short or mail service is regular and good, delivery will in many cases be faster by proper employment of physical delivery. This is particularly true as regards classified messages which, if sent by a telecommunications means, would have to be encrypted and decrypted.

6013. PROCEDURE

- .1 The message is prepared by the originator in exactly the same way as any other message. When physical delivery is used for all addressees, a message heading shall not be used; the originator and addressees shall be indicated by official titles. If delivery to some addressees is accomplished by telecommunications, copies to be physically delivered to other addressees may contain a message heading. In cases where encrypted call signs and/or address groups have been used in conjunction with unclassified text, security precautions set forth in NWIP 16-1, Chapter 20, and ACP 121, Chapter 5, must be applied. The date-time group will always be indicated.
- .2 All copies to be physically delivered shall be authenticated with the signature of a responsible person in the communication organization of the originator.
- .3 If the message is delivered directly to the office of destination, receipt for delivery together with the time of delivery will be obtained, and this data should be entered on the file copy of the message prior to permanent filing by the office of origin. If the message is not to be delivered directly, the time of placing into a delivery system, location, and system (e.g., airmail, ARFCOS, etc.) will be entered on the file copy of the message prior to permanent filing.
- .4 The envelopes containing copies of messages will be addressed to the commanding officer of the ship or command marked "deliver to message center."
- .5 Any suitable message blank or form may be used. The physically delivered copy shall be clearly marked DELIVER TO MESSAGE CENTER IMMEDIATELY UPON RECEIPT FOR HANDLING AND DISTRIBUTION.

6020. TELECOMMUNICATIONS

6021. TELECOMMUNICATIONS

- .1 The term telecommunications embraces any transmission, emission, or reception of signs, signals, writing, images and sound or intelligence of any nature by visual or oral means, or by wire, radio or other electromagnetic systems.
- .2 Telecommunications means are as follows:
 - (a) Sound.
 - (b) Visual.
 - (c) Electrical (wire or radio).
 - (1) Telegraph.
 - (2) Teletypewriter.

6021.2(c) (Continued)

- (3) Telephone.
- (4) Facsimile.
- (5) Other emissions.

6030. SOUND

6031. SIGNALING BY SOUND

- .1 Use of sound for communication is limited to certain prescribed sound signals, such as the signals prescribed for vessels by the RULES OF THE ROAD, for air raid alerts, etc. When locally-arranged sound signals are used in special circumstances, care must be exercised that they do not conflict with more commonly used signals and thereby confuse ships or stations not familiar with the special signal.
- .2 Instructions for sound communications between ships in convoy are contained in WARTIME INSTRUCTIONS FOR MERCHANT SHIPS -- VISUAL SIGNALING AND TACTICS (ACP 148).

6032. UNDERWATER SOUND DEVICES

- .1 Ships so equipped may anticipate the use of underwater sound for communications.
- .2 Sonar communications shall be conducted in accordance with radiotelegraph and radiotelephone procedure as appropriate.

6040. VISUAL

6041. VISUAL SYSTEMS

- .1 Visual communications are those means wherein the receiver detects optically the intelligence transmitted. Types of visual means are:
 - (a) Flashing Light.
 - (1) Directional.
 - (2) Non-directional.
 - (3) Infra-red communications.
 - (b) Semaphore.
 - (c) Flaghoist.

6042. INTERCEPTION OF VISUAL COMMUNICATIONS

- .1 Commanders must control the use of flashing light and other easily intercepted plain language visual communications in areas where interception by enemy forces, agents, or other unauthorized persons is possible.
- .2 Where practicable, visual means will be used for communication in preference to radio. At night, when consideration must be given to the possibility of divulging the ship's position or when there is probability of enemy interception, line-of-sight radio is preferable.

6043. VISUAL SILENCE

- .1 The officer in tactical command (OTC) will prescribe visual silence when it is deemed necessary. Under conditions of visual silence there shall be no signaling by visual means between sunset and sunrise except:
 - (a) Essential recognition signals.
 - (b) Essential messages transmitted by means of infra-red communications.
- .2 Night cruising orders should be issued early enough to permit their transmission to all addressees before sunset.
- .3 The commander should be informed of the status of visual traffic at nightfall so that important messages requiring relay may be transmitted by other means, or that the originator be advised of delay in delivery.

6044. VISUAL RESPONSIBILITY

- .1 In visual communications, relaying is accomplished automatically when the call-up is made by using a collective call sign. A message to be relayed should be passed on item for item when possible. The object is a minimum lag between the originator's transmission of each item and its accurate delivery to the last addressee.
- .2 The general rule for determining the responsibility for any situation is that each addressee is responsible for the delivery of the message to addressees beyond himself in the general direction away from the originator. No rule set forth herein, or prescribed by responsible commanders, shall be interpreted as restricting the initiative of any ship in relaying a message to an addressee failing to respond when called. It is the duty of any ship to expedite the transmission of a message by relay when it is evident that she is in a better position to effect the necessary relay than the ship specifically responsible.
 - (a) Single Line Formations. Any given ship is responsible for other ships in the direction away from the originating ship.
 - (b) Multiple Line or Circular Formations and Dispositions. Each task force (group) commander is responsible for his own task group (unit) commanders and also for other task force (group) commanders in a direction away from the originating ship. In turn each task unit commander is responsible for the division or line leaders of his own unit and for other unit commanders and ships in a direction away from the task group commander. The division or line leader is responsible for the ships of his own division or line, and each ship of the division or line is responsible for the ships in the division or line in a direction away from the leader.
 - (c) Dispositions. In any disposition or formation the chain of visual responsibility shall be governed by the rules set forth above unless modified by responsible commanders.
 - (d) Alterations. When a maneuver alters the position of units and ships relative to the OTC the responsibility for relaying signals does not alter until all ships complete the maneuver. Screening ships should assume responsibility for delivery of recent screen traffic to ships joining or rejoining in their sector of the formation.
- .3 The potential efficiency of the visual installations in various ships or types should be taken into consideration when prescribing sectors of visual responsibility.

6044. (Continued)

- .4 Ships may be designated specifically as repeating stations. When designated, their function is to act as primary relay stations to facilitate communications.
- .5 In order to achieve maximum efficiency with visual signals in large task organizations, delays in effecting delivery of messages to ships of the screen on outer circles must be reduced to a minimum.
- .6 Commanders may prescribe and publish diagrams showing sectors of visual responsibility.
- .7 A ship having visual communication duty for a nest or group of ships in port is considered as the communication guard for the group as far as visual communications are concerned. That ship shall answer, receipt for, and deliver all visual traffic for addressees in the group. The use of prosigns to indicate relay or transmission to other ships in the group is not required.

6045. PREFERENCE FOR TRANSMISSION

- .1 During daylight the normal order of preference for transmission is:
 - (a) Tactical signals-
 - (1) Flaghoists.
 - (2) 12-inch (or smaller) signal searchlight.
 - (3) Large signal searchlight.
 - (b) Message traffic-
 - (1) Semaphore.
 - (2) 12-inch (or smaller) signal searchlight.
 - (3) Large signal searchlight.
- .2 During hours of twilight or darkness, the use of infra-red signaling equipment to transmit messages or signals is more desirable than visible light from the standpoint of divulging the position of ships or units.
- .3 Between sunset and sunrise, 12-inch searchlights shall be fitted with a suitable filter and reducing adapter.

6046. USE OF SIGNAL LIGHTS

- .1 In war the greatest care shall be taken that signal lights are used only when necessary and that the minimum of light is employed, except when making recognition signals. A light of sufficient brilliancy is to be used in sending a recognition light to ensure its being seen immediately. However, it must be remembered always that in heavy weather destroyers and small ships have difficulty in reading dim lights due to movement and sea.
- .2 The background always should be considered. Care should be taken not to signal with a light close to or in line with navigation lights.
- .3 No upper deck lights should be visible on or in the vicinity of the signal bridge.

6046. (Continued)

- .4 At dusk and early daylight, signal lights will be carefully tested for leakage of light except from the proper aperture.
- .5 At night-
 - (a) An alert watch is to be kept for signals emanating from the ship of the senior officer.
 - (b) After communication has been established, it often may be found that the brilliance of the light can be still further reduced. Ships are to inform other ships signaling to them when their lights are observed to be of greater beam width or brilliance than necessary.
 - (c) It is absolutely essential when using any type of directional light that it be kept trained accurately on the receiving ship throughout the transmission.
- .6 Sighting arrangements of lights are to be tested frequently for alignment.
- .7 Masthead and yardarm signal lights and circuits must be kept efficient. In order to prevent them from being switched on accidentally or short circuiting, the switches on the bridge in the supply leads should be kept open until they are actually required.

6047. USE OF SPEED LIGHTS

- .1 When prescribed by competent authority, speed lights shall be displayed by Naval vessels underway in company, to indicate the setting of the engineroom telegraphs when both engineroom telegraphs are at the same setting. If both engineroom telegraphs are not at the same setting the speed light shall indicate as closely as possible the speed resulting from the means between the settings of the engineroom telegraphs. Meaning of the speed light displays are as follows:

Ahead, operational Groups of FIVE WHITE flashes

Ahead, stationing Groups of FOUR WHITE flashes

Ahead, standard STEADY WHITE LIGHT

Ahead, two-thirds Groups of TWO WHITE flashes

Ahead, one-third SINGLE WHITE flashes

Stop STEADY RED LIGHT

Back (one-third or
two-thirds). SINGLE RED flashes

Back, full Groups of TWO RED flashes

6048. VISUAL COMMUNICATIONS WITH AIRCRAFT

- .1 Signaling between aircraft and surface vessels is slow and difficult at best. Frequent exercise in signaling between aircraft and surface forces should be conducted to promote skill.
- .2 Friendly identity of aircraft must be ascertained by surface vessels prior to any effort to establish communications by light.
- .3 When signaling is taking place between aircraft in flight and the ground (or surface vessels), the following points must be borne in mind:
 - (a) Visual signaling from aircraft is possible only when the aircraft is occupying certain positions relative to the line of sight from the station with which signaling is taking place. Consequently, owing to the rapid movement of the aircraft, the signaler may find that the time is very short during which the aircraft is in those positions favorable for signaling.
 - (b) The signaler in an aircraft has no one to write down the message for him. He has to read the whole of the message, and write it down from memory, or write down each word before sending a flash.
 - (c) It may therefore be advisable with long messages to use double-flash procedure as explained in Article 12006.
 - (d) The aircraft should be maneuvered into a favorable position for the signaler to have an unobstructed vision for as long a period as possible.
- .4 Signal personnel should be familiar with the visual signals used by aircraft in distress, and by carriers and other ships involved, to expedite emergency landings as set forth in Chapter 15 of U.S. NAVAL MANEUVERING INSTRUCTIONS.
- .5 Since only multi-engined aircraft normally carry signal lights, signal personnel must be alert to interpret the intelligence being conveyed by aircraft maneuvers.
- .6 Meaning of aircraft maneuvers are as follows:

<u>Maneuver</u>	<u>Meaning</u>
360 degree left turn -	REQUEST COMMAND POST IDENTIFICATION.
Alternate dips and climbs -	REQUEST FRONT LINE MARKING.
Rock wings -	MESSAGE UNDERSTOOD.
Yaw right and left -	AM GOING TO DROP MESSAGE.
360 degree right turn -	MISSION COMPLETED.
Sharp S turn -	WILL SUPPORT YOU. INDICATE TARGET.
Circle right, rocking wings -	MESSAGE NOT UNDERSTOOD. REPEAT.
Circle left, rocking wings -	I AM TRYING TO CONTACT YOU ON THE AIR/SURFACE COMMON FREQUENCY.

6050. ELECTRICAL

6051. RADIO AND WIRE

- .1 Electrical means are radio and wire. They may be used singly or in combination to transmit intelligence by telegraph, teletypewriter, telephone, facsimile or other emissions.
 - (a) Radio uses electromagnetic waves not guided by a physical path between sender and receiver.
 - (b) Wire uses electromagnetic waves carried by electrical conductors between sender and receiver.
- .2 Naval communications utilizes the following electrical means:
 - (a) Telegraph, both manual and semi-automatic.
 - (b) Teletypewriter, both manual and semi-automatic.
 - (c) Telephone.
 - (d) Facsimile.
 - (e) Other emissions, such as television and data impulses.

6052. CIRCUIT TERMINOLOGY

- .1 The following terms are used in connection with various types of circuits:

CIRCUIT - An electrical path between two or more points capable of providing one or more communication channels.

DUPLEX CIRCUIT - A circuit which permits communication between stations in both directions simultaneously. The term "full duplex" is synonymous with duplex.

HALF-DUPLEX CIRCUIT - A circuit which permits uni-directional communication between stations. Technical arrangements may permit operations in either direction but not simultaneously. The term "simplex" is synonymous with half-duplex.

SECTION 3

6100. RADIO

6101. NOMENCLATURE OF RADIO FREQUENCIES

- .1 Nomenclature of radio frequencies is as follows:

	<u>Range</u>
Very Low Frequency (VLF)	Below 30 kc.
Low Frequency (LF)	30 to 300 kc.
Medium Frequency (MF)	300 to 3,000 kc.
High Frequency (HF)	3,000 to 30,000 kc.
Very High Frequency (VHF)	30,000 kc. to 300 mc.
Ultra High Frequency (UHF)	300 to 3,000 mc.
Super High Frequency (SHF)	3,000 to 30,000 mc.
Extremely High Frequency (EHF)	30,000 to 300,000 mc.

6102. SELECTION OF RADIO FREQUENCIES

- .1 Ships preparing to transmit over the ship-to-shore frequencies must ensure that the following steps are taken:
- (a) Choose that frequency within the prescribed assignment which will best cover the distance, taking into account the time of day, the season of the year and the direction of the transmission and transmitter type capabilities (Reference: DNC 14).
 - (b) Tune transmitter and receiver to frequency by means of a frequency meter. Prior calibrations may be used only as guides and shall not be considered as exact settings.
 - (c) Ensure that the antenna actually is radiating. It should be noted that antenna trunks in all types of ships, submarines in particular, may suffer marked reduction of transmission efficiency during prolonged cruises where normal maintenance is not practicable.
- .2 In peacetime, merchant ships normally do not use naval radio stations for ship-to-shore communications, except in emergencies or when specifically authorized.

6103. SUSCEPTIBILITY OF TRANSMISSIONS

- .1 All radio transmissions are susceptible to interception and/or radio direction finder search. The bands least susceptible are:
- (a) Below 3 mc. during daytime provided the transmitter is over 200 miles from the intercepting station and low power is being utilized. During nighttime, signals below 3 mc. are often propagated hundreds of miles even though low power is utilized especially in the range 2-3 mc.
 - (b) Above 30 mc. provided the transmitter is well beyond the optical horizon of the intercepting station and low power is being utilized. However, there will be a few instances where signals above 30 mc. will be propagated hundreds of miles even though low power is utilized especially in the range 30-100 mc.

6104. TYPES OF RADIO WATCHES

- .1 Radio watches are maintained in the following categories:

Requirements

Guard	Maintain a continuous receiver watch with transmitter ready for immediate use. Complete log to be kept.
Cover	Maintain a continuous receiver watch with transmitter calibrated and available but not necessarily ready for immediate use. Complete log to be kept.
Copy	Maintain a continuous receiver watch, keeping a complete log.
Listen	Maintain a continuous receiver watch with complete log optional.

6105. SPLIT-PHONE WATCHES

- .1 When there is a shortage of radiomen, nets with light traffic sometimes are manned by split-phone watches. In the split-phone method, each earpiece ties into a different net, enabling the operator to guard two frequencies at the same time.
- .2 When establishing a split-phone watch, the operating signal ZKV, meaning I AM STANDING SPLIT-PHONE WATCH ON _____ kc. (or mc.), may be used to advise other ships or stations in a net. Circuit designators should be used to designate the frequency.
- .3 When the station is called on both frequencies simultaneously, the split-phone operator tells one station to wait until the message is received from the other. This is accomplished by either the use of the prosign AS, or the operating signal ZKF, meaning STATION LEAVES NET TEMPORARILY (for so many minutes)(to communicate with) (will be on _____ kc. or mc.). Circuit designators should be used to designate the frequency.

6110. RADIO NETS

6111. FORMATION OF NETS

- .1 Net operation is the technique of interchanging messages between communication facilities operating from different geographical locations in a specified procedure and under the operational control of a designated station.
- .2 A net normally consists of more than two stations which are capable of communicating with each other under the control of the net control station (NCS). Under certain conditions a net may consist of only two stations or several point-to-point facilities directly connected to a common control station. A net may be formed through the medium of:
- (a) A circuit where the terminal equipment responds to signals transmitted directly from another station on the net.
- (b) Switchboards where a station can be connected to any other station on the net.
- (c) Such separate circuits from the net control station to individual units or activities or variations as required.
- .3 It is desirable to comply with the following general rules in establishing a net and administering the responsibilities of the NCS:

6111. (Continued)

- (a) Each net will be established in accordance with instructions from competent authority.
- (b) Prior to activating a net, any special instructions will be promulgated to each station.
- (c) Procedure prescribed for the means employed will be used.
- (d) Stations are required to report to the NCS prior to leaving the net or securing the net for a period of time, giving the approximate time of re-entering the net. Emergency situations should be considered separately.

6112. NET CONTROL STATION

- .1 The NET CONTROL STATION is a station designated by appropriate authority to direct and control the operation and flow of all traffic on the net. The station serving the senior command normally is designated as the NCS. It may be any station on a net, however, which can best fulfill the functions of exercising circuit discipline and expediting traffic.
- .2 An NCS is charged with the following responsibilities:
 - (a) Expediting traffic on the net.
 - (b) Maintaining circuit discipline.
 - (c) Limiting transmissions to the essential minimum.
 - (d) Resolving disputes incident to traffic handling.
 - (e) Monitoring traffic to determine and initiate corrective action of procedural discrepancies.
- .4 Authority of the NCS extends only to the net operation. It is not intended that the NCS have jurisdiction over the local administration of individual stations within the net. Within its scope of authority, decisions of the NCS are final.

6113. ALTERNATE NET CONTROL STATION

- .1 In order to provide for emergency situations an alternate NCS should be appointed. The designated alternate NCS should take charge of the net when the normal NCS is inoperative for any reason. When in control of the net, the alternate NCS will assume the NCS's responsibilities.

6114. FREE NET

- .1 When operational factors permit, the net may operate as a FREE NET, in which case the NCS authorizes member stations to transmit traffic to other net stations without obtaining prior permission from the NCS.

6115. DIRECTED NET

- .1 When operational requirements dictate that net stations obtain the NCS's permission prior to transmitting on the net, it is advisable to operate as a DIRECTED NET. Normally, directed nets are necessary when complicated traffic patterns or security factors exist which warrant direct control of each transmission by the NCS.
- .2 Transmissions on a directed net may be accomplished in accordance with predetermined schedules.

6116. TYPES OF NETS

.1 The type of net and method of NCS operation are determined from consideration of operational factors involved. In reaching a decision, it should be remembered that certain equipment and net arrangements are more rapidly adaptable to free interchange of messages than others.

.2 By usage, radio nets may be classified into three types:

(a) Command net is one linking any commander with his immediate subordinates in the chain of command and such other units as may be designated.

EXAMPLE: TASK FORCE COMMAND - Activated by the task force commander; guarded by task group commanders.

(b) Common net is one linking all ships or troop units of a designated task organization.

EXAMPLE: TASK GROUP COMMON - Activated by the task group commander; guarded by ships or troop units within the task group.

(c) Functional net is one normally used to connect directly those personnel delegated control of a specified function for which the net is provided.

EXAMPLE: PICKET REPORTING NET - See Article 10032.

6117. NET TRANSMISSIONS

.1 When deemed advisable, the NCS should prescribe the speed of transmission on a radiotelegraph circuit, or the qualifications of the operators to be employed during specific periods.

.2 When authorized by the NCS, speed key may be employed on manually-operated radiotelegraph nets.

6120. SHIP-TO-SHORE CIRCUITS

6121. USE OF SHIP-TO-SHORE CIRCUITS

.1 Ship-to-shore circuits are the primary means for delivery of traffic from individual ships and afloat commands to shore addressees.

.2 Ship-to-shore frequencies shall not be used for point-to-point, or ship-to-ship operation, or for any purpose other than ship-to-shore communication. Exception may be made only for traffic of extreme urgency and importance.

.3 In the event that radio silence has to be broken to transmit a message of importance to operations, one of the measures below may serve to minimize the significance of the transmission to the enemy.

(a) If the presence of the force has been discovered, or is believed to have been disclosed to the enemy, the regular ship-to-shore communications, using cryptographic channels, may be employed. But either call sign encryption or codress procedure and indefinite call signs in the call-up should be used.

(b) An aircraft or ship capable of fairly long range radiotelegraph communications may be sent to a position some distance from a task force to transmit important traffic to shore stations via ship-to-shore circuits.

6121. (Continued)

- .4 Where it is contemplated to handle ship-to-shore traffic on tactical circuits, instructions for the handling of such traffic should be specific, with channels designated for the flow from each echelon of command. In cases not covered by such specific instructions, the ship-to-shore frequencies should be used.

6122. LOCAL HARBOR NETS

- .1 Local harbor nets are provided in fleet ports where visual and other means do not suffice.
- .2 The Senior Officer Present Afloat will designate the net control station and prescribe rules for the administration and operation of the net.
- .3 If not already provided, and the Senior Officer Present Afloat determines that its need is justified, he may establish a local harbor net.

6123. LOCAL SHIP-TO-SHORE CIRCUITS

- .1 Where circumstances require a local ship-to-shore radio circuit, and regular shore naval radio facilities are not adequate, such a circuit may be instituted at the direction of the SOPA. This special circuit should be utilized primarily for official traffic.
- .2 The following rules will govern the administration of local ship-to-shore circuits:
 - (a) A fleet frequency designated by SOPA will be used.
 - (b) The shore station installation will be augmented by fleet personnel.
 - (c) SOPA will designate a call sign to be used.

6124. REPLIES TO COMMANDS ASHORE

- .1 A commander afloat may disregard instructions received from a commander ashore to reply or report by message, if in his opinion the sending of the message reply or report is prejudicial to the mission, is contrary to communication restrictions currently effective, or the tactical situation does not permit.

6130. POINT-TO-POINT CIRCUITS

6131. FIXED CIRCUITS

- .1 Point-to-point circuits are those fixed radio and wire circuits established for communications between shore stations or facilities.
- .2 Point-to-point circuits of the Naval Communication System are usually multi-channel with trunk line capacity for large traffic loads.
- .3 Fixed stations operating point-to-point circuits shall employ a separate daily series for each channel with each fixed station with which they are in communication.

6132. HOURLY IDENTIFICATION

- .1 All Navy fixed radio stations are required to send their international call signs on each frequency employed in nontactical point-to-point service at the beginning and end of operation, and at least once an hour during continuous operations. Stations engaged in tape relay operation may comply by using their international call signs during

6132. (Continued)

the hourly exchange of number comparisons.

- .2 In order to comply as far as practicable with international treaties to which the United States is signatory, and in cooperation with the Federal Communications Commission, identification will be made as follows:
- (a) Radiotelegraph transmissions shall be identified by sending the prosign DE and the call sign in International Morse Code.
 - (b) Radiotelephone transmissions shall be identified by speaking the proword THIS IS and the letters of the call sign.
 - (c) Radioteletypewriter transmissions shall be identified by transmitting the prosign DE and the call sign. Identification will be made on each channel of multiple channel circuits.
 - (d) Radio-facsimile transmissions shall be identified by any or one of the preceding methods after removing the facsimile signal. Pictures need not be interrupted to comply with the hourly identification.
 - (e) When using twin channel single sideband with radiotelephone on one channel, identification shall be made only as in sub-paragraph (b) above.

6133. DOMESTIC POINT-TO-POINT FIXED OPERATION

- .1 Policy for domestic point-to-point fixed operation is contained in JANAP 195.

6134. CONFERENCE CIRCUITS

- .1 Teletypewriter conference circuits (TELECON), are provided for employment on circuits as specifically authorized by the Chief of Naval Operations (DNC). Teletype conference procedure is set forth in Subsection 13040.

6135. USE OF POINT-TO-POINT CIRCUITS BY FORCES AFLOAT

- .1 Forces afloat at or near advance bases or staging points should use fixed circuits for delivery of traffic to rear areas rather than high frequency ship-to-shore circuits. If not at anchor in the harbor, such traffic may be delivered to shore stations via low power local ship-to-shore or harbor nets. When in port, it should be delivered by visual or guard boat.
- .2 When filed, the message should be encrypted, if required, and ready to be transmitted.

6140. AMATEUR RADIO

6141. AMATEUR RADIO STATIONS AFLOAT AND IN AIRCRAFT

- .1 Amateur radio stations on board naval vessels or in naval aircraft are prohibited except when specifically authorized by the Chief of Naval Operations (DNC).
- .2 Specific authorization normally will be limited to cases where units are operating in areas isolated from normal personal communication channels for extended periods, or when unusual conditions warrant approval for morale reasons. Requests for specific authorization for each individual case should be submitted to the Chief of Naval Operations (DNC) via the normal chain of command well in advance of

desired operations. Approval, if granted, will authorize the operation of the amateur radio station for a limited period only, and may authorize the use of installed Navy radio equipment. Operators of all amateur radio stations must hold a valid amateur radio license issued by the Federal Communications Commission (FCC).

- .3 Transmissions from naval ships or aircraft to amateur radio stations are prohibited, except:

- (a) In an emergency
- (b) Upon specific authorization by the Chief of Naval Operations (DNC).

6142. AMATEUR RADIO STATIONS ASHORE

- .1 The following general provisions govern the installation and operation of amateur radio stations within U. S. naval reservations in areas where the conduct of communications is subject to regulations by the FCC. Detailed instructions governing the installation and operation of amateur radio stations within U. S. naval reservations are contained in OpNav Instruction 2070.2:

- (a) Amateur radio equipment may, at the discretion of the commander, be placed in the same compartment with naval radio equipment, provided the prescribed technical standards are met.
- (b) Interference with naval communications and other hazards must be avoided.
- (c) All amateur station installations within a naval reservation shall be made with the commander's approval. Records will be kept of all amateur stations installed within a command.
- (d) Amateur stations located within naval reservations and licensed to an individual residing outside the reservation will be authorized only for use in connection with training of the Naval Reserve or morale of naval personnel.
- (e) Stations operating within the amateur frequency bands require amateur station licenses. Naval Reserve stations, operating on government (U. S. Navy assigned) frequencies, do not require amateur licenses.
- (f) Individuals desiring a license for an amateur station to be installed on a naval reservation shall prepare the usual FCC application. The application will be forwarded via official channels to the District or River Command Commandant. If approved, the commandant will forward the application to the FCC office having cognizance of licensing in the area.
- (g) Amateur applications must be prepared in the name of an individual without indication of military status.
- (h) FCC regulations require that the applicant have absolute responsibility for the control of any transmitter when used in the amateur service and that the transmitter be used only with a personal aim and without pecuniary interest.
- (i) Although the amateur licensee is legally responsible for all transmissions made by his transmitter, the commander concerned may regulate the time during which an amateur station on a naval reservation under his command may be operated, and at his discretion may revoke authority for operation.

6142. (Continued)

- (j) Some measure of censorship or control should be exercised by the command so as to prevent transmissions injurious to Navy interests.
- (k) Amateur radio stations within naval reservations shall transmit no information relative to the use, availability, or arrangement of government equipment and facilities.

6143. ASHORE AT OVERSEAS BASES

- .1 Authorization for the installation and control of the operation of amateur radio stations within naval reservations overseas, in areas not subject to FCC regulations, shall be vested in the area commander, subject to such rules as may be prescribed in the area by the cognizant regulatory authority. Appropriate provisions of paragraph 6142.1, above shall be observed.

6144. MERCHANT SHIPS UNDER NAVAL CONTROL

- .1 The use of amateur radio stations aboard merchant ships when under naval control is prohibited. Naval Control of Shipping Authorities shall include this directive in sailing instructions.

6145. PEACETIME OPERATION WITHIN AMATEUR FREQUENCY BANDS

- .1 Joint military policy provides that during normal peacetime conditions amateur frequency bands will not be employed for military communications in the continental U. S. and possessions except as authorized by the Interdepartment Radio Advisory Committee or by special agreement with the FCC.
- .2 Within interference range of the continental U.S. and possessions, frequencies in the high frequency amateur bands (3500-4000 kc., 7000-7300 kc., 14000-14400 kc.) shall not be employed without prior coordination with the Chief of Naval Operations.
- .3 Various types of military transmitting equipment, such as handie-talkie, may be supplied with crystals which operate within the amateur frequency bands. The existence of these crystals does not authorize operation on the amateur frequencies concerned.

6150. CALIBRATION OF EQUIPMENT

6151. CALIBRATION

- .1 All transmitters and receivers will be calibrated to all frequencies within their range which are allocated by the frequency plan to be used by the fleet, force, type or unit.
- .2 During wartime, calibration of transmitters will be made while in port at bases as far from the enemy as practicable, preferably during upkeep or training periods.
- .3 During calibration, antennas will be grounded and the transmitter will be tuned through all stages preceding the antenna stage. Final tuning of the antenna stage will require actual emissions on the air. The lowest possible power should be utilized and due consideration should be given to calibrating the antenna stages when distant transmissions are least possible. Generally speaking, for frequencies below 15 mc., antennas should be tuned around midday; between 15 and 30 mc., well after dark. VHF and UHF antennas may be tuned in the daytime. Prior to tuning the antenna stage the operator shall monitor the frequency concerned to insure that further tuning will not hamper communications on that frequency.

6151. (Continued)

- .4 Forces afloat are responsible for calibration of shipboard direction finders. All direction finders shall be initially calibrated so that deviation throughout the equipment's range is known or can be reliably interpolated. Recalibration must be conducted immediately after any topside structural alterations are made to ensure accuracy of deviation curves. For search and rescue operations, calibration on the frequencies set forth in Article 6303 is especially important.

6152. USE OF FREQUENCY METERS

- .1 The frequency of radio receivers on circuits where no or few transmissions have been received should be checked with the frequency meter at least once every hour. This is not applicable to crystal controlled receivers.
- .2 After initial calibration, shipboard transmitters utilizing electron coupled master oscillators and which are being used frequently should be checked at least once per watch. A transmitter not in frequent use should be checked each time prior to transmitting. This is not applicable to crystal controlled transmitters.
- .3 All ships and stations should check frequency meters at least once a week against the standard frequency broadcast and maintain a log of checks conducted.
- .4 Care must be exercised to prevent radiation outside the ship by disconnecting actual receiver and adjacent antennas, and grounding transmitter antennas when checking the frequency of the master oscillator of an electron coupled transmitter.
- .5 It is imperative that equipment mounted in aircraft, tanks, LVTs and other vehicles, and portable equipment used by tactical air control parties and shore fire control parties be checked for correctness of operating frequency whenever practicable. A check is recommended at least once an hour during inactive periods (radio silence conditions permitting). Radio equipment in tanks receives particularly rough treatment and tank transmitters have been known to drift as far as 70 kc. from their prescribed channels in a few hours of operation.

6153. TESTING TRANSMITTERS

- .1 Ship
 - (a) Testing should not be authorized or permitted until due consideration has been given to the radiation characteristics of the frequencies to be used, the power to be used, and the conditions of radio silence in effect.
 - (b) Ships should be permitted to check calibration, tuning, and radiation of transmitters under actual antenna load by prearranged tests with other stations. These tests cannot be permitted underway or in advanced areas where the maintenance of radio silence is important. Tests should be allowed while ships are at anchor in ports in rear areas.
 - (c) The senior officer present shall authorize and control any transmissions made for test purposes.
 - (d) The ship desiring to test shall make a request in advance to the senior officer present giving the specific time and frequencies on which a test is desired, and power to be used.
 - (e) The senior officer present, upon approval of the request, shall inform the ship of the radio station designated for the test and

make necessary arrangements with the radio station concerned.

- .2 Shore: Transmitters ashore should be checked as frequently as is necessary to ensure their being at all times adjusted accurately to the authorized frequencies.

6154. TESTS AND EXERCISES USING EMERGENCY LIFEBOAT TRANSMITTERS

- .1 Restrictions. International Radio Regulations restrict use of frequencies 500 kc. and 8364 kc. to the following:

(a) 500 kc.:

- (1) For the distress call and distress traffic.
- (2) For urgency and safety signals and messages.
- (3) For calling and replying.
- (4) By coastal stations when announcing the transmission of their traffic lists.

(b) 8364 kc.:

- (1) For the sole use of survival craft wishing to establish communications with ships or stations relating to search and rescue.

- .2 Limited Tests or Exercises. In connection with the above, limited tests or exercises may be conducted by ships using emergency lifeboat transmitters at 500 kc. and/or 8364 kc., only if the following procedures are strictly observed:

(a) When automatic keying is used.

- (1) The transmitter antenna connection will be either grounded or connected to a dummy antenna.
- (2) The test or exercise will be confined to a closed steel compartment within the ship or in an R.F. shielded room if ashore.

(b) When hand keying is used:

- (1) A listening watch will be maintained on the frequency employed to ensure that no interference will be caused to another transmission already in progress.
- (2) The international silent period will be observed. No signal will be used which may be construed as indicating an actual emergency, such as SOS, EMERGENCY, and AIRCRAFT DOWN.
- (3) The word DRILL will be transmitted at the beginning and end of each message. In addition, an exercise number, if used, may be transmitted following the word DRILL at the beginning of each message.

6155. FREQUENCY TOLERANCES

- .1 The frequency tolerances for naval shore-based and mobile stations are as follows:

CLASS OF STATION	10 kc. TO 50 kc.	50 kc. TO 535 kc.	535 kc. TO 4000 kc.	4000 kc. TO 30 mc.	ABOVE 30 mc.
Shore-based	.1%	.02%	.005%	.003%	.01%
Mobile		.05%	.015%	.015%	.01%

- .2 These tolerances have been set as operational standards and must be maintained. Communication security activities monitor naval frequencies to ensure the above standards are maintained and report off frequency transmissions by message or memorandum.

6156. REDUCTION OF UNWANTED EMISSION

- .1 Transmitters will be set on the assigned frequencies as indicated by previous calibrations. Final tuning adjustments shall be made after radio silence is broken.
- .2 During radio silence, key positions or microphones will not be connected with a transmitter except:
- (a) In aircraft.
 - (b) On aircraft control nets.
 - (c) On the warning net of radar guardships.
- .3 Aircraft transmitters will be sealed with tape or equivalent material in order to prevent inadvertent transmissions.
- .4 Even though radio silence is not imposed, tuning of transmitters shall be accomplished by methods which do not require radiation from the antenna, in order to minimize interference to others using the net or circuit.
- .5 Avoid excessive signal strength.

6157. RECEIVER RADIATION

- .1 Receiver radiation of 0.1 microvolts per meter, measured at a distance of one nautical mile from the receiver, on any frequency to which the receiver local oscillator may be tuned, is an acceptable figure below which receiver radiation will not constitute a hazard to security.

6158. PERSONAL RADIO RECEIVERS IN WARTIME

- .1 Commanding officers will exercise proper surveillance over broadcast receivers on board their ships. Personal radio receivers may not be installed or operated on board ship in wartime.
- .2 Commanding officers shall retain all personal radio equipment on board, such as that belonging to troops en route to an objective, during passage.
- .3 Ships are equipped with BUSHIPS-approved entertainment type receivers. Commercial type receivers must be tested for conformance with the standards prescribed in Article 6157 above, prior to installation.

6160. WIRE

6161. LANDLINE FACILITIES

- .1 Navy teletypewriter and telephone facilities include both Navy-owned and leased commercial landlines and equipment.
- .2 All additions or modifications to existing landline facilities and services, less telephone, are subject to prior approval by the Chief of Naval Operations (DNC) with the following exceptions:
 - (a) In case of emergency when the military situation will not permit delay. In this event, concurrence will be requested as soon as practicable thereafter.
 - (b) In case only minor rearrangements are necessary, provided no basic change in a circuit is involved and time does not permit prior approval.

6162. COMMERCIAL TELETYPEWRITER SERVICE

- .1 The term TELETYPEWRITER as used herein is a general term which includes all printing instruments of the TELETYPE, TELEPRINTER, or similar types. Therefore, it is necessary that the model or type designation be used to describe a particular piece of teletypewriter equipment. The terminology as indicated below is used to designate available commercial communication services:
 - (a) Leased private line teletypewriter service (TWPL or PLT) - AT&T or WU.
 - (b) Limited leased teletypewriter service (Telemeter) - WU.
 - (c) Teletypewriter Exchange Service (TWK) - AT&T.
 - (d) Teletypewriter tie line (Delivery service) - WU.
 - (e) Aeronautical Service (CAA) - AT&T.
 - Service A (Weather) - AT&T
 - Service C (Weather) - AT&T
 - Service F (Flight control, by telephone) - AT&T
 - Service O (Weather reports for overseas flights) - AT&T

6163. TELETYPEWRITER EQUIPMENT

- .1 Requests for teletypewriter equipment shall be forwarded to the Chief of Naval Operations (DNC) in accordance with effective OpNav Instructions.

6164. NAVY TELEPHONE FACILITIES AND SERVICE

- .1 Requests for telephone facilities and service should be processed in accordance with existing directives promulgated by the Chief of Naval Operations and the Chief of the Bureau of Yards and Docks.

SECTION C6200. METHODS OF RADIO TRANSMISSION

6201. PRINCIPAL METHODS

- .1 The principal methods of handling traffic by electrical means are as follows:
 - (a) Receipt method.
 - (b) Intercept method.
 - (c) Broadcast method.
- .2 Operational requirements determine the use of these methods.

6202. RECEIPT METHOD

- .1 The receipt method is that method of delivery by which the receiving station indicates that he has received each transmission. This indication may be effected by:
 - (a) The receiving station transmitting a receipt after each message or sequence of messages; or
 - (b) A periodic station serial or channel number comparison between the stations.
- .2 The receipt method is the normal method of handling radio-telegraph point-to-point, ship-to-ship, ship-to-shore and aircraft traffic. It also may be authorized by responsible commanders for shore-to-ship communications in peacetime and, under exceptional circumstances, in wartime.
- .3 The receipt method is the most reliable, since no doubt exists as to the addressee's receipt of the message. Repetitions and corrections may be obtained as desired at the time of transmission.
- .4 A decided disadvantage in the use of this method in wartime is that it entails the use of transmitters by both stations. The presence of both stations is thereby disclosed, and their positions can be determined by direction finding. Since the use of individual call signs frequently is required, this method may lead to the disclosure of the identity of the stations called.

6203. INTERCEPT METHOD

- .1 The intercept method is that method of delivery by which the transmitting station sends to a second station. The latter obtains necessary repetitions to ensure correct reception, and repeats the message back. Messages thus transmitted are actually intended for third stations which are required to copy the transmissions but do not receipt for them or use their transmitters for any other purpose directly in connection with these transmissions.
- .2 The intercept method is not currently employed within the U. S. Navy.

6204. BROADCAST METHOD

- .1 The broadcast method is that method of delivery by which a station transmits serially numbered messages at scheduled times. Receiving stations maintain a complete file of such numbered messages but do not receipt for them.

6204. (Continued)

- .2 The principal advantage of the broadcast method is that the station addressed does not answer, thus avoiding disclosure of position. It has the further advantage that it often is possible to avoid the use of the individual call signs of the stations addressed, thus concealing the identity of such addressees.
- .3 The broadcast method has attained such a high degree of reliability, that it is used as the primary method for delivery of messages from shore stations to the forces afloat. Reliability can be further assured by the use of transmitters of adequate power, careful choice of frequencies, monitoring the accuracy of transmissions, good operating technique, use of serial numbers, and the use of repetitions.
- .4 Perforated tape keying customarily is used for the transmission of messages on broadcast schedules. Tape keying is advantageous because the material may be prepared in advance, the characters are uniform, and the tape facilitates retransmissions.

6205. SPEED OF OPERATION

- .1 All stations which make regularly scheduled transmissions by broadcast method should, if practicable, employ automatic equipment.
- .2 On CW broadcasts, automatic keying at speeds between 17 and 29 words per minute is employed. The actual speed to be used will be determined by the authority operating the particular broadcast. In establishing the operating speed, the term WORDS PER MINUTE is used to refer to the reading of the tachometer on the keying-head drive without regard to the composition of the material being transmitted. The tachometer is calibrated by using a prepared tape on which has been repeatedly perforated the word PARIS followed by one space bar function.
- .3 Traffic load permitting, stations will operate Fleet Broadcasts at 14 words per minute from 0000 to 0600 local time. At least one hour prior notice will be given by the shore station before resuming normal keying speed. All units copying Fleet Broadcast are directed to make maximum use of this period to train CW operators.

6210. FLEET BROADCASTS

6211. PRIMARY MEANS OF DELIVERY TO OPERATING FORCES

- .1 Fleet broadcasts are the primary means of delivering traffic to the fleet.
- .2 During amphibious operations, and at certain advance bases, these schedules also are used to deliver traffic to commands ashore.
- .3 In addition to conforming to the convoy communication plan, Navy vessels sailing in troop or trade convoys, other than escorts, shall copy the appropriate fleet broadcast if personnel and equipment permit. The routing order should so specify.
- .4 Operator periods and guardship arrangements for the Operating Forces are discussed in NWIP 16-1.

6220. GENERAL BROADCASTS

6221. CONTENTS OF GENERAL BROADCASTS

- .1 A general broadcast may include schedules of one or more of the following: hydrographic information (HYDRO), merchant ship traffic (MERCASST), weather forecasts, time signals and press. The hydro and

6221.1 (Continued)

weather broadcast schedules are not specifically addressed (i.e. the broadcast station transmits to a general call - CQ) whereas MERCASST and press schedules are specifically addressed (i.e. station transmits to a specific call sign - NUKO, NERK, ETC.).

6222. HYDROGRAPHIC INFORMATION

- .1 Hydrographic information relating to Western Atlantic waters is broadcast in the HYDROLANT series, either numbered or unnumbered, according to general or local interests. A similar series, HYDRO PAC, is issued for Pacific waters.

6223. MERCHANT SHIP BROADCASTS (MERCASST)

- .1 The MERCASST schedules are used primarily for delivering messages to ships of the Military Sea Transportation Service while at sea; to merchant ships routed by the Naval Control of Shipping Organization, or when prior arrangements have been made.
- .2 Unless otherwise directed, MERCASST schedules are not copied by:
 - (a) MSTS contract operated tankers, which shall be governed by the Tanker Operating Instructions (TANKOPINS). MSTS contract operated tankers follow commercial practices, hence their communications are governed generally by commercial procedures.
 - (b) Alien manned MSTS ships. Detailed instructions shall be issued by the appropriate MSTS authority.
- .3 Due to the operating requirements peculiar to the several categories of ships copying MERCASST schedule, the method of conducting these broadcasts differs from that followed by specifically addressed broadcasts in the following:
 - (a) Use of a traffic list. The traffic list is normally the first item to be transmitted, and consists of the call sign and date time group (transmitted twice) of each message awaiting transmission, listed in order of precedence. Ships directed to copy MERCASST will copy the traffic list of all appropriate schedules. When all messages addressed to the ship, as indicated by the traffic list, have been copied or if no messages addressed to the ship are included in the traffic list, the ship may cease copying this schedule.
 - (b) Use of different message forms. MSTS ships-in-commission (USS) and MSTS ships-in-service (USNS) (Civil Service Manned) (CS) use both the naval and international commercial form. MSTS ships-in-service (USNS) (Contract operated tankers, Alien manned ships), and merchant ships sailing under NCSORG control or other arrangements use the international commercial form only.
 - (c) Speed of transmission to accommodate holders of second class commercial Operating licenses. (See Article 9103).
 - (d) Restriction of the use of operating signals. Operating signals taken from the military portion of ACP 131 ("Z" signals), as well as international "Q" signals, may be used for traffic addressed only to MSTS ships in commission (USS). International "Q" signals will be employed for traffic addressed to all other categories of MSTS ships and merchant ships. The following table will serve as a guide in transmitting messages on MERCASST to the several categories of MSTS ships:

6223. (Continued)

	AUTHENTI- CATION	ADDRESS GROUPS	PLAIN LANGUAGE	Z SIGNALS	JANAP 195
<u>MSTS SHIPS:</u>					
Commissioned (USS)	YES	YES	YES	YES	YES
	Copy MERCAST at sea. Make guardship or other arrangements while in port.				
Non-commissioned					
Civilian-manned (USNS) (CS)	NO	YES	YES	NO	NO
	Copy MERCAST at sea. Permitted to secure in port if suitable arrangements for delivery of traffic are made locally.				
Contract-operated Tankers (USNS)	NO	NO	YES	NO	NO
	Copy MERCAST only when routed by NCSORG or when operating under other special conditions. All other times guard commercial facilities. The extent of MERCAST coverage is contained in the movement report.				
Alien-manned (USNS)	NO	NO	YES	NO	NO
	Copy MERCAST only when directed by cognizant area commander. Detailed instructions will be promulgated.				
<u>MERCHANT SHIPS (SS):</u>					
Time chartered or Voyage chartered	NO	NO	YES	NO	NO
	Normally copies established commercial facilities. When special operations require it, arrangements will be made to augment or replace the commercial facilities by providing for the use of Navy facilities, in which case all activities concerned will be informed.				
Space chartered	NO	NO	YES	NO	NO
	Copy MERCAST only in emergencies as listed in HO 205, Appendix A, Sections 1 and 2.				

- .4 MSTS commissioned ships (USS), in addition to copying MERCAST, also copy the general message schedules of the fleet broadcast appropriate to the area.

6224. PRESS

- .1 Press is transmitted on General Broadcasts at scheduled times. This material is purchased by the Navy from the press associations with the general provision that it will not be placed into competition with the normal press association outlets and commercial subscribers of the associations. The press may be copied by any U.S. Naval ship, including USNS MSTS ships for consumption by members of the Armed Forces, their dependents, other passengers sponsored by the Department of Defense who are being transported in ships of the Military Sea Transportation Service, and Civil Service crewmen of USNS ships. It may also be used by naval personnel at remote shore activities outside the Continental U.S., provided no source of commercial press is available.

6224. (Continued)

- .2 Where disclosure to unauthorized persons is a possibility, all copies of naval press should be marked FOR OFFICIAL USE ONLY. DESTROY AFTER IT HAS SERVED ITS PURPOSE. THIS PRESS MUST NOT FALL INTO UNAUTHORIZED HANDS.
- .3 Special arrangements may be made for the copying of commercial press.

SECTION D

6300. EMERGENCY, DISTRESS AND SAFETY TRAFFIC

6301. INTERNATIONAL REGULATIONS

- .1 Regulations concerning emergency, distress and safety traffic are promulgated by the International Telecommunication Union (ITU) in its publication, INTERNATIONAL TELECOMMUNICATION AND RADIO CONFERENCES, ATLANTIC CITY, 1947. Pertinent extracts as quoted in Chapter 5 of RADIO AIDS TO NAVIGATION (HO 205) and in COMMUNICATION INSTRUCTIONS-DISTRESS AND RESCUE PROCEDURE (ACP 135) should be understood clearly.

6302. NAVAL VESSELS IN DISTRESS

- .1 Communications originated by naval vessels will be transmitted on appropriate naval communication channels whenever practicable rather than on international and national distress frequencies.

6303. DISTRESS FREQUENCIES

- .1 Emergency and distress frequencies:
 - (a) 500 kc. - International calling and distress.
 - (b) 2182 kc. - International calling and distress for maritime mobile telephone service.
 - (c) 8364 kc. - Communications of survival craft.
 - (d) 121.5 mc. - Aeronautical emergency frequency for VHF Band.
 - (e) 243.0 mc. - Aeronautical emergency frequency for UHF Band.
 - (f) 2670 kc. - U.S. Coast Guard Emergency and Calling Frequency. (Coast Guard listed here for information purposes only. Used by many small boat operators for distress. See Annex (A) to JANAP 195).
- .2 The International Calling and Distress Frequencies (500 kc. and 8364 kc.) are the normal intra-convoy frequencies for emergency communications. This does not preclude the use by commanders of escort units of a suitable frequency for the convoy tactical and warning net when the ships convoyed are suitably equipped.

6304. DISTRESS WATCHES AFLOAT

- .1 Every detachment or independent ship or unit shall maintain a guard or cover of the emergency and distress frequencies unless exempted by one of the following:
 - (a) Interference with military effectiveness. If the OTC or the officer ordering the movement determines that maintaining such guard or cover will interfere with the military effectiveness of the ship or

6304. (Continued)

unit, he may exempt the ship or unit from this requirement.

- (b) Ships in port or operating in local operating areas. The SOPA may authorize ships in port and ships operating in specified local operating areas under his jurisdiction to secure watch on distress frequencies, provided he has determined that adequate coverage is maintained by guardship, or by a shore radio station in the vicinity.
- .2 As a minimum requirement, the distress frequencies (500 kc. and 8364 kc.) will be covered by loudspeaker watches during working hours. Particular attention shall be paid to the silent periods observed on 500 kc. A log shall be maintained covering at least the silent periods. When sufficient personnel are available a continuous or split-phone watch with log shall be maintained on the distress frequencies. For ships copying the one or two-operator periods of the fleet broadcast schedule, working hours will be considered to be the times of these broadcasts. For ships carrying three or more operators, working hours will be considered to be continuous.
- .3 If equipment is available, and subject to the provisions of Article 6304.1, a continuous guard or cover shall be maintained on the aeronautical emergency frequencies (121.5 mc. VHF and 243.0 mc. UHF).

6305. DISTRESS WATCHES ASHORE

- .1 All naval shore radio stations open to public correspondence shall maintain a continuous receiver watch on 500 kc. They shall be particularly alert on the frequency during silent periods. A list of Navy and Coast Guard shore radio stations maintaining guard on 500 kc. and 8364 kc. is contained in JANAP 195.
- .2 In order to enhance safety at sea and in the air each naval district commandant shall maintain such additional watches on distress frequency as may be appropriate.
- .3 All Air Force communication centers and air defense control centers guard the distress frequencies.

6306. INTERNATIONAL FORM

- .1 When answering a distress message, the following international form shall be used:
- (a) Call sign of distress ship (three times), the prosign DE, call sign of own ship (three times), RRR SOS.
- (b) At the discretion of the commanding officer, a ship receipting for a distress message will give its name, position in latitude and longitude and the maximum speed at which it is proceeding toward the vessel in distress.
- .2 The vessel making the distress call shall be the control station for distress traffic. Any station, however, may impose silence on all stations in the zone of any one station causing interference with the distress traffic. The operating signal QRT, followed by the word DISTRESS and addressed either TO ALL (CQ) or to any one station, will be used.

6306. (Continued)

- .3 When distress traffic is ended or it is no longer necessary to observe silence, the station which has controlled this traffic shall send a message addressed to all indicating that the distress traffic is ended. This message shall take the following international form:
 SOS CQ CQ CQ DE _____ (Call sign of the station transmitting)
 _____ (Name and call sign of the ship in distress)QUM.
 (Reference: Chapter 5, HO 205).

6307. RELAYING DISTRESS MESSAGES

- .1 At the discretion of the commanding officer, a ship which has heard an unanswered distress message but which is not in a position to render assistance, will:
- (a) Repeat the distress message on the distress frequency, using full power, and will follow the transmission with DE and its own call sign repeated three times.
 - (b) Forward the message (by operating signal, readdressal, inclusion in the text of a naval message, or other appropriate form) to a naval shore activity for possible action and/or appropriate broadcast to the fleet.

6308. MERCHANT SHIPS IN DISTRESS

.1 Wartime procedure:

- (a) A merchant ship will send a distress message to summon assistance only in cases of great urgency when in distress due to normal marine cause, not enemy action. The form is similar to that of a contact report, and the distress signal SOS is made three times.
- (b) Shore stations, upon receipt of distress messages in wartime, shall take the following action:
 - (1) If on 500 kc., the shore station shall rebroadcast the message immediately in the exact form in which it was received, but with the addition of the date-time group of receipt followed by the call letters of the shore station.
 - (2) If on high frequency, the shore station shall acknowledge receipt of the message, but shall not rebroadcast it.
 - (3) The shore station shall, in addition to the action taken as described in (a) and (b) above, relay the message exactly as received to the appropriate naval commander and/or any other naval activity designated by him.
 - (4) Shore stations which have established communications with a merchant ship as a result of a distress message shall not initiate unofficial messages. Any messages addressed to such a ship must be originated by the appropriate naval authority.
 - (5) When rebroadcasting distress messages which have been prefaced by the auto-alarm signal (a series of 12 four-second dashes with one second intervals between dashes), shore stations shall not preface their rebroadcast with the auto-alarm signal.

6308. (Continued)

(c) Indicating signals used by merchant ships in wartime to designate distress due to enemy action are as follows:

<u>Class of Distress</u>	<u>Signal</u>	<u>When Used</u>
Warship raider	WWWW	On sighting or when attacked by an enemy warship.
Armed merchant ship raids	QQQQ	On sighting or when attacked by an enemy armed merchant ship raider.
Submarine	SSSS	On sighting or when attacked by an enemy submarine.
Aircraft	AAAA	On sighting or when attacked by enemy aircraft.
Mine	MMMM	On striking a mine.

6309. SPECIAL MESSAGE WARNINGS

- .1 During emergencies in peace time and during times of disaster or war, special message warnings are sent and utilize the highest precedence that can be assigned. These warnings fall in the following categories:
- (a) Hurricane, typhoon, or tidal wave warnings.
 - (b) Reporting unidentified contacts with submarines.
 - (c) Initial enemy contact reports.
 - (d) Immediate amplifying reports to the above.

SECTION E

6400. ARMED FORCES RADIO AND TELEVISION SERVICE STATIONS

6401. IDENTIFICATION OF RADIO AND TV STATIONS

- .1 A standard policy has been adopted by the U.S. military services for the identification of Armed Forces radio and television stations. This identification does not involve the use of international call signs, which have proven undesirable for this purpose.
- .2 The station originating a network program will identify the network, such as American Forces Network, Far East Forces Network, etc. This will be the signal for network stations to identify themselves immediately thereafter as follows: "This is United States Armed Forces Radio (or Television)", followed by the city, base, or other appropriate geographical location.
- .3 Independent stations will use the same identification format without the initial network identification.
- .4 Identification will be made at least hourly, unless to do so would cause interruption of a continuous program of over one hour duration.